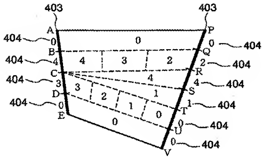
REMARKS/ARGUMENTS

Claims 1-4, 6-9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Serizawa (EP Application No. 0872266 A1) in view of Yoshida (EP Application No. 1029569 A2).

Embodiments of the present invention are premised on the matters described below, as is specifically disclosed in page 16, line 19 to page 17, line 27 of the specification and in Fig. 7.

FIG.7



As illustrated in Fig. 7, line segments extend between the edges of the road (e.g. AE and PV, etc.), and each line segment is divided into line segment regions (e.g. AB, BC, CD, DE, PQ, etc.) Next, for each neighboring pair (e.g. BC and QR) of the line segments, the end points of the regions of the first line segment (e.g. B or C) of the pair and the end points of the regions of a second line segment (e.g. Q or R, respectively) are connected sequentially from both the edges of the pair, and quadrilateral areas (e.g. BCRQ) or triangular areas are formed (e.g. triangle RCS).

In the case of quadrilateral areas, two facing edges are line segment regions (e.g. BC and QR), and the others are not line segments (e.g. BQ and CR). In the case of triangle areas, each triangular area has three edges, of which one edge (e.g. ST) is a line segment region, and others are not line segment regions (e.g. SC and CT).

In various embodiments, when a moving object is included in a quadrilateral area, the calculation unit estimates a number of times the moving object is located there based upon two stored "passage numbers" of the quadrilateral. In an example of quadrilateral BCRQ, one

stored passage number is "4" and the other stored passage number is "2." Additionally, when the moving object is located in a triangular area, the estimate is based upon only one store "passage number." In the example of triangle SCT, above, the "passage number" is illustrated as "1."

As previously described, a "passage number" refers to the number of times moving objects pass over that specific portion of the track (a segment region.) The passage number is used in various embodiments to change the display of the track. Specifically, the specification states:

> In the game apparatus according to the present invention, … the update unit may update the stored passage number of the moving object in accordance with a change in the stored position of the moving object, <u>and the display unit may further display an image which is changed in accordance with the stored passage number of the moving object</u>. P.5, l.11-16.

Additionally, as illustrated in the embodiment in Fig. 7, a larger quadrilateral (e.g. BCRQ may be segmented into a number of smaller quadrilaterals. The number of quadrilaterals in various embodiments is the difference in passage numbers + 1. Using the example above, line segment BC has an estimated passage number of "4" and QR has an estimated passage number of "2." Then, the number of "smaller" quadrilaterals is three (e.g. 4-2+1=3). Further, as illustrated in Fig. 7, passage numbers may be calculated with each of the defined quadrilaterals, based upon the passage numbers of the line segments. In the example of quadrilateral CDUT, the number of "smaller" quadrilaterals is four (e.g. 3-0+1=4).

Accordingly, in various embodiments, the road can be seen divided into triangular or quadrilateral areas, <u>along the direction of the road</u> , and <u>across the road</u>. As discussed above, the estimated passage numbers for the "smaller" quadrilaterals need not be stored and may be easily calculated based upon the passage numbers of the line segments.

In various embodiments, the number and shape of "smaller" quadrilaterals dynamically changes during the game. In various embodiments, as a moving object passes over one line segment region, the stored passage number of the line segment changes, and based upon the embodiments descried above, the number and size of the "smaller" quadrilaterals also changes. For example, if the stored passage number of line segment BC changes from "4" to

"5", but the stored passage number of line segment QR remains at "2," the number of "smaller" quadrilaterals increases to four (5-2+1=4). The sizes of the quadrilaterals also shrinks in this example.

In light of the above, claim 1 has now been amended to be directed to precisely cover various aspects of the various embodiments, described above. More specifically, claim 1 now recites:

> wherein, said calculation unit
>
> (a) estimates the passage number for each triangular area having one line segment region for which passage number L has been stored, as L; and
>
> (b) divides each quadrilateral area bounded by two line segment regions for one of which passage number M has been stored and for the other of which passage number N (M<N) has been stored so that N-M+1 number of small quadrilateral areas are arrayed in a row and so that one end of the row is defined by the line segment region with the stored passage number M and other end of the row is defined by the line segment region with the stored passage number N, and estimates respective passage numbers of the arrayed small quadrilateral areas, as M, M+1, M+2..., N-2, N-1, N, respectively in order from one small quadrilateral area at said one end of the row to another small quadrilateral area at the other end of the row.

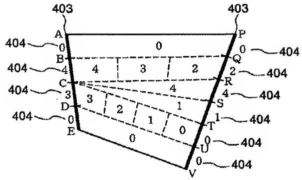
Clearly, nothing in either Serizawa or Yoshida discloses anything regarding these new limitations, accordingly claim 1 is asserted to be allowable over these references.

As previously acknowledged by the Examiner, Serizawa does not disclose this structure. Additionally, Yoshida does not disclose this structure. Yoshida merely describes breaking up a track into quadrilateral-shaped regions. Importantly, each of these quadrilateral shaped regions is fixed for a track, and the number of quadrilaterals is constant. The Examiner appears to acknowledge this by stating:

> Yoshida discloses estimating the next block a vehicle will travel on based on the block the vehicle is currently on (paragraph [0015])... if the vehicle were currently in a region which has been passed through 4 times, it would be obvious that the next region would have been passed through 3 times.

The undersigned traverses the Examiner's logic and basis for finding obviousness. First, the Examiner attempts to equate "counting laps" with "passage numbers." This does not make sense because "counting laps" is associated with a moving object, and not the virtual road. In contrast, various embodiments are concerned with modeling the virtual road, and not the progress of a racer on a track. The logic also does not make sense because "passage numbers" as described in various embodiments is very different from "counting laps." If various embodiments were only concerned about "counting laps," there would be no need to form triangles, quadrilaterals, "small quadrilaterals," or the like. This is because number of laps can be simply stored for all parts of a virtual track. In contrast, the estimated passage numbers are associated with different parts of the virtual road, and are not constant for different parts of the virtual track. As a clear example, see Fig. 7, e.g. BC=4, ST=1, PQ=0, etc.

FIG.7



Furthermore, the undersigned traverses the Examiner's logic because various embodiments do not require a decreasing relationship between passage numbers. For example, the Examiner stated: "if the vehicle were currently in a region which has been passed through 4 times, it would be obvious that the next region would have been passed through 3 times." This is not so, as can be seen in Fig. 7. Notably, there is no indicated direction of travel in this figure. In this example, line segment QR is associated with passage number 2 and line segment BC is associated with passage number 4. These passage numbers depend upon the number of time a vehicle crosses the respective line segment. For instance, a vehicle may enter and cross line segment BC and exit via line segment ST, or a vehicle may enter and cross line segment RS and

exit via line segment BC. The direction of travel is not important in various embodiments, accordingly the Examiner's obviousness argument is faulty.

In contrast to the cited art, as recited in the claims, there are triangular regions and quadrilateral region, where the number of passage is estimated for each triangular region and for each "smaller" quadrilateral region. Additionally, the number of "smaller" quadrilateral regions dynamically changes as the moving object moves on the road in the virtual world. Therefore, the number of passages can be evaluated more accurately in regions where there is greater moving object passage (i.e. road regions of heavier travel may be modeled more accurately with more "small" quadrilateral regions, and road regions of lighter travel may be modeled with fewer "small" quadrilateral regions.)

Accordingly, various embodiments of the present invention propose a method for estimating a passage number for a desired location, without having to directly store the passage number. Instead, the estimated passage number is calculated based upon length and width of the passage.

In light of the above, and for other reasons, independent claims 1, 9 and 11, as amended, are asserted to be allowable.

Claims 2-4 and 6-8, dependent upon claim 1 are also asserted to be allowable for substantially the same reasons as claim 1, and more specifically, for the additional limitations they recite.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

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